

CLAIMS

1. A method for identifying a target for antibacterial agents, comprising determining the bacterial target of a product of a bacteriophage 77 open reading frame selected from the group consisting of open reading frames 17, 19, 43, 102, 104, and 182.
2. The method of claim 1, wherein said determining comprises identifying at least one bacterial protein which binds to said product or a fragment thereof.
3. The method of claim 1, wherein said determining comprises identifying at least one protein:protein interaction using a genetic screen.
4. The method of claim 1, wherein said determining comprises a co-immunoprecipitation assay or a protein-protein crosslinking assay.
5. The method of claim 1, wherein said determining comprises identifying a bacterial coding sequence which protects a bacterium against said bacteriophage inhibitor when expressed at high levels in said bacterium.
6. The method of claim 1, wherein said determining further comprises identifying a bacterial nucleic acid sequence encoding a polypeptide target of said bacteriophage inhibitor protein.
7. The method of claim 1, further comprising determining the cellular or biochemical function or both of said inhibitor protein.
8. The method of claim 1, wherein said identifying the bacterial target comprises identifying a phage-specific site of action.
9. An isolated, purified, or enriched nucleic acid sequence at least 15 nucleotides in length, wherein said sequence corresponds to at least a portion of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 sequence.
10. The nucleic acid sequence of claim 9, wherein said nucleic acid sequence encodes a polypeptide which provides a bacteria-inhibiting function.

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11. An isolated, purified, or enriched polypeptide comprising at least a portion of a protein normally encoded by *Staphylococcus aureus* bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182, wherein said portion is at least 5 amino acid residues in length.
12. A recombinant vector comprising a nucleic acid sequence at least 24 nucleotides in length corresponding to a portion of bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182.
- 10 13. A recombinant cell comprising a vector, wherein said vector comprises a nucleic acid sequence at least 24 nucleotides in length corresponding to at least a portion of bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182.
14. The cell of claim 13, wherein said vector is an expression vector and
- 15 expression of said ORF is inducible.
15. A method for identifying an antibacterial agent, comprising identifying an active portion of a product of a bacteria-inhibiting ORF of a bacteriophage.
- 20 16. A method for identifying a compound active on a bacterial target protein of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 product, comprising the step of
- contacting said bacterial target protein with a test compound; and
- determining whether said compound binds to or reduces the level of activity
- 25 of said target protein,
- wherein binding of said compound with said target protein or a reduction of the level of activity of said protein is indicative that said compound is active on said target and wherein said target is uncharacterized.
- 30 17. The method of claim 16, wherein said contacting is carried out *in vitro*.
18. The method of claim 16, wherein said contacting is carried out *in vivo* in a cell.
- 35 19. The method of claim 70, wherein said compound is selected from the group consisting of a small molecule a peptidomimetic compound, or a fragment or derivative of a bacteriophage inhibitor protein.

20. A method of screening for potential antibacterial agents, comprising the step of determining whether any of a plurality of compounds is active on a target of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 product, wherein said target is naturally produced by a pathogenic bacterium.
- 5 21. A method for inhibiting a bacterium, comprising the step of;  
contacting said bacterium with a compound active on a target of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 product, wherein said target or the target site is uncharacterized.
- 10 22. The method of claim 21, wherein said contacting is performed *in vitro*.
23. The method of claim 21, wherein said contacting is performed *in vivo* in an animal or a plant.
- 15 24. A method for treating a bacterial infection in an animal suffering from an infection, comprising administering to said animal a therapeutically effective amount of compound active on a target of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 product in a bacterium involved in said infection,  
20 wherein said target is an uncharacterized target or the compound is active at an uncharacterized target site.
- 25 25. The method of claim 24, wherein said compound is selected from the group consisting of a small molecule, a peptidomimetic compound, and a fragment or derivative of a bacteriophage inhibitor protein.
26. A method for prophylactically treating an animal at risk of an infection, comprising administering to said animal a prophylactically effective amount of a compound active on a target of a bacteriophage 77 open reading frame 17, 19, 43,  
30 102, 104, or 182 product,  
wherein said target is an uncharacterized target or the site of action of said compound is an uncharacterized target site.
- 35 27. The method of claim 26, wherein said compound is selected from the group consisting of a small molecule, a peptidomimetic compound, and a fragment or derivative of a bacteriophage inhibitor protein.

28. An antibacterial agent active on a target of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 product, wherein said target is an uncharacterized target or said agent is active at a phage-specific site on said target.
- 5 29. The agent of claim 28, wherein said agent is selected from the group consisting of a pepetidomimetic of a bacteriophage inhibitor polypeptide a small molecule, or a fragment or derivative of a bacteriophage inhibitor polypeptide.
30. The agent of claim 28, wherein said agent is a small molecule.
- 10 31. A method of making an antibacterial agent, comprising the steps of:
- a) identifying a target of a bacteriophage 77 open reading frame 17, 19, 43, 102, 104, or 182 product;
- b) screening a plurality of test compounds to identify a compound active on
- 15 said target; and
- c) synthesizing said compound in an amount sufficient to provide a therapeutic effect when administered to an organism infected by a bacterium naturally producing said target.
- 20 32. The method of claim 31, wherein said compound is selected from the group consisting of a small molecule, a peptidomimetic compound, and a fragment or derivative of a bacteriophage inhibitor protein.

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